

Feb. 1, 1938.

W. C. HEPKE

2,106,740

PAPER BAG MACHINE ATTACHMENT

Filed March 25, 1935

2 Sheets-Sheet 1

Fig. 1.

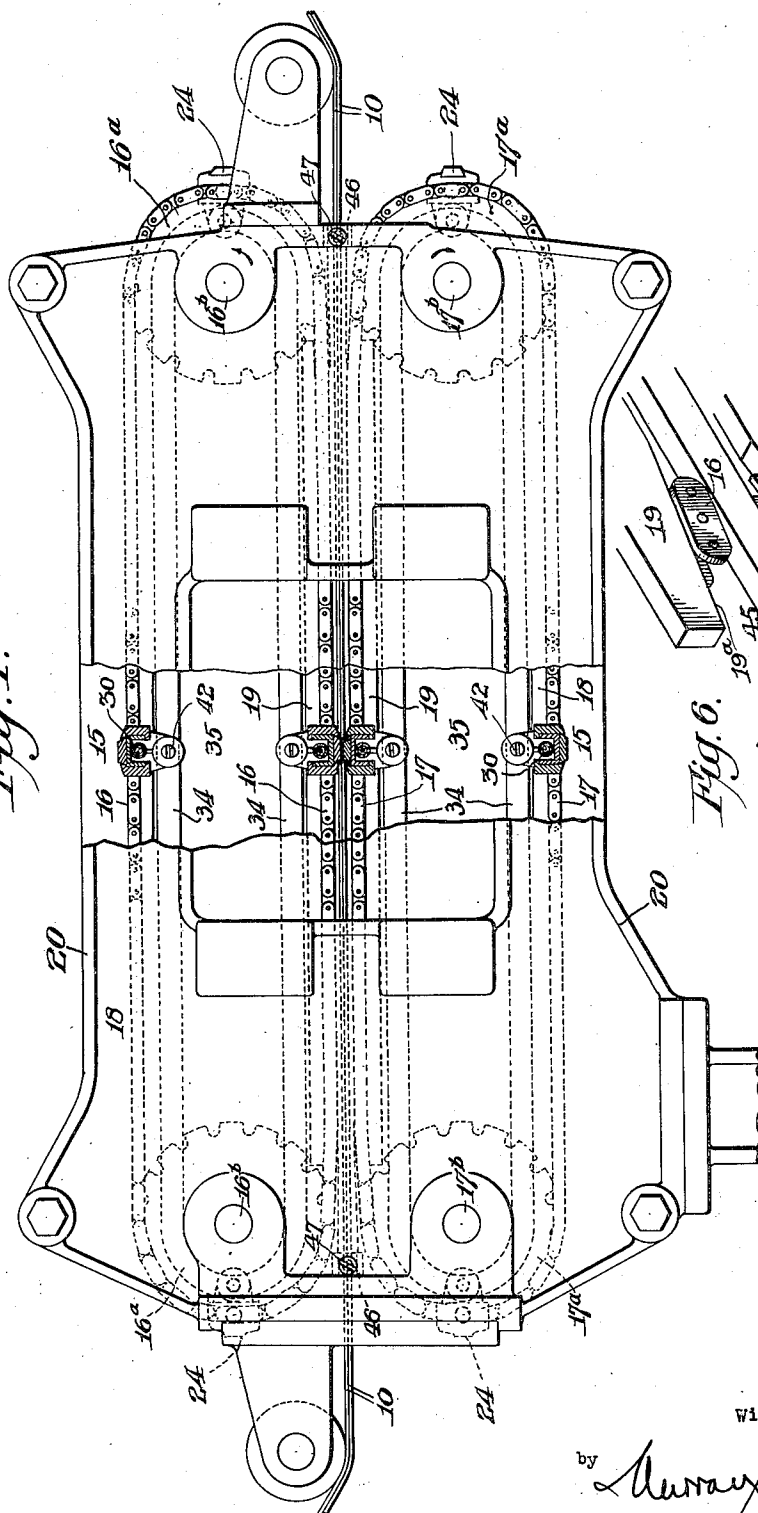
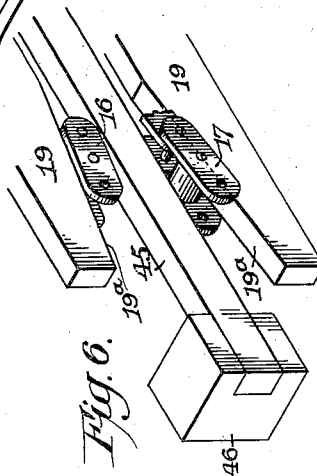


Fig. 6.



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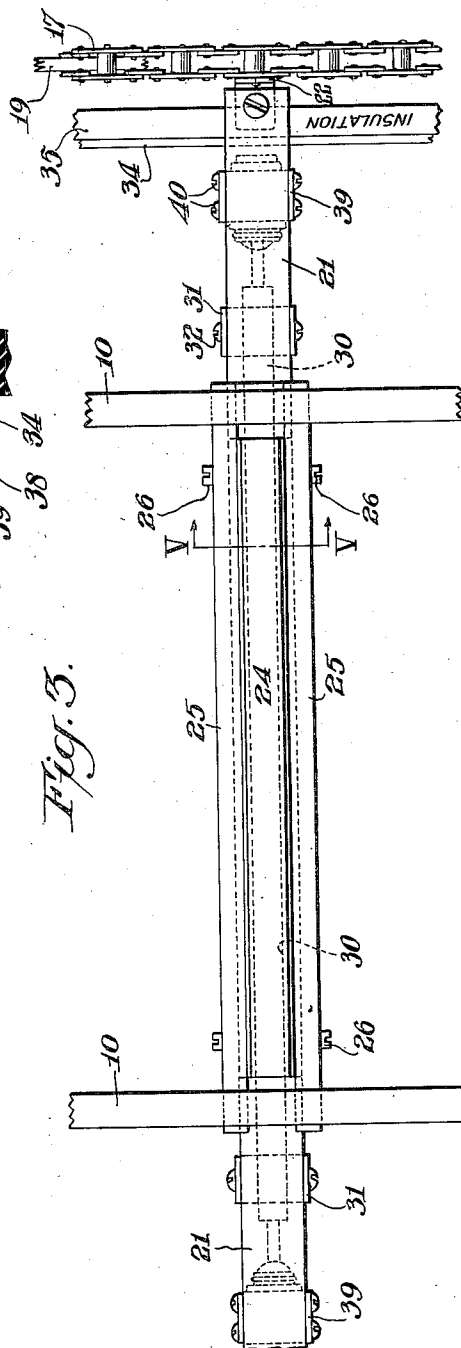
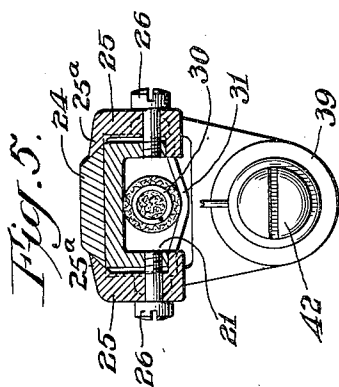
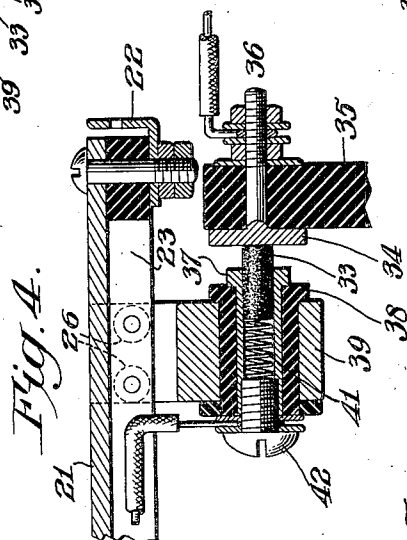
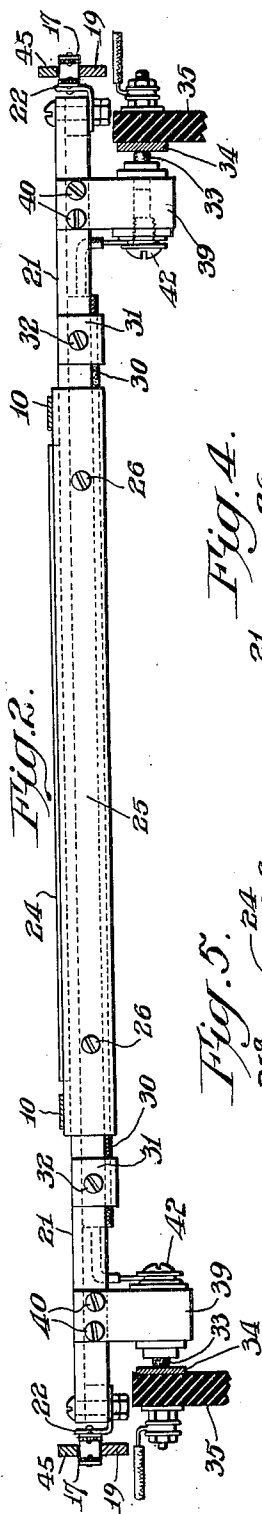
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PAPER BAG MACHINE ATTACHMENT

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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PAPER-BAG MACHINE ATTACHMENT

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Application March 25, 1935, Serial No. 12,938

14 Claims. (Cl. 93—27)

This invention relates to paper-bag-making machines, and comprises means for clamping and simultaneously heating the folded bottom closures of paper bags for the purpose of effectually sealing the same.

In the manufacture of paper bags, the material from which such bags are made—paper or the like—is first formed into a tube by overlapping the opposite marginal edges of a web of bag-making material, usually in a continuous length, and uniting such overlapped edges by suitable adhesive and then the tube thus formed is subsequently cut into blanks of bag length which are completed by folding over an end of the same and securing it against one wall of the bag by a suitable adhesive.

Bags are made of various kinds of material—different types of paper, sized and unsized—and a great many bags are made from waxed paper and a material known as "glassine", the latter being a translucent material having a relatively hard surface. Some difficulty has been experienced in uniting the overlapping edges in the formation of tubes from this material, and also in uniting the folded end of a bag blank cut from such tube in the formation of bottom or end closures for bags.

In the companion application filed of even date herewith, Serial No. 12,937, means are disclosed for assisting the completion of the seam of the tube and the effective sealing of the same by heat and/or pressure—a traveling metal band, suitably heated, being arranged to move with and contact the overlapping edges of the bag material forming the tube. The traveling band presses the edges together and thereby facilitates the setting of the adhesive, while the heat present materially assists in such action and, in the case of coated or waxed papers, softens or melts such coating to an extent sufficient to form a permanent union between such overlapping edges.

The present invention is directed to means for clamping and assisting the sealing of the bottom portions of bags, such bottoms comprising an end part of the blank which is folded or turned over and fastened against one wall of the blank, being usually secured in place by an interposed line of adhesive.

One object of the invention is to provide complementary clamping members which are automatically brought into registering position to carry between them the folded end closures of the bags to which an adhesive may have been applied. The bags are delivered by the usual

conveyor tapes extending from the bag-making machines, and pass between pairs of endless chains forming carriers for the clamping members; such clamping members being mounted upon the endless chains in such manner that a pair of them are brought into engaging position with respect to the folded bottom portion of a bag as the latter is fed from the bottom-forming mechanism of the paper-bag-making machine.

For the purpose of securing the bag bottoms in place, heated clamping members are carried by traveling chains, the chains being disposed in such cooperative relation that pairs of the clamping members carried thereby are brought into registry at regular intervals. Just before these clamping members engage, the folded end of a bag constituting the bottom thereof is presented in position to be gripped or clamped between such registering members. The bags in such relation are conveyed for a short distance by the clamping members and then dropped onto a conveyer, the time interval having been sufficient to permit the clamping action of the members plus the heat of the same to cause the adhesive or other securing agent to set and complete the bottom formation of the bag.

While various means may be employed for the purpose of heating these bars, I prefer to employ electrical means, and each bar carries a heating coil. To transmit current to such heating coils, they are provided with brush contacts at their opposite ends which travel in engagement with contact plates properly positioned with respect to the same.

These and other features of the invention are more fully set forth hereinafter, reference being had to the accompanying drawings, more or less diagrammatic in character, in which:

Figure 1 is a view in elevation, partly in section, of traveling clamping and heating means within the scope of this invention.

Fig. 2 is a cross-sectional view, illustrating in elevation one of the clamping and heating elements.

Fig. 3 is a plan view of the same.

Fig. 4 is an enlarged sectional view of one end of one of the clamping and heating bars, showing the electrical contact and associated parts.

Fig. 5 is an enlarged cross-sectional view of one of the clamping and heating bars, taken on the line V—V, Fig. 3, and

Fig. 6 is a fragmentary, perspective view illustrating a detail of the invention.

As the tubular bag-forming structure advances through a paper-bag-machine, it meets mecha-

nism which severs sections of said tube into what are known as "bag blanks." To complete these blanks into bags or similar containers, it is necessary to fold over one end of such blank, and such folded-over portion must be secured to the wall of the blank by a suitable means which may include an adhesive in order to complete the bottom.

A common practice in many forms of paper-bag-making machines is to carry the bags away from the bottom-forming mechanism by means of endless conveyor tapes between which the bags are temporarily held. In the manufacture of certain types of bags—particularly those made from coated papers, waxed papers, coated Cellophane, and the like—it is highly desirable that heat and pressure be applied to the folded and pasted bottom to insure proper adherence of the folded parts by the coating thereof or the interposed film of paste, and effect the formation of a proper bottom for such bags.

In carrying this invention into effect, two sets of endless chains are provided, mounted on sprocket wheels, and driven in any suitable manner at the same speed as the endless bag-carrying tapes. These chains carry at regular intervals clamping members which are heated, and between pairs of these clamping members which come into registering position and relative contact, the bag bottom is introduced, the same being carried along at the same surface speed as the bag-delivering tapes. The respective clamping members are heated and, for this purpose, electrical heating elements are preferably employed.

At the end of certain forms of paper bag machines where the bags are delivered, two sets of endless traveling tapes 10 are provided, between which the bags may be caught and carried to a suitable conveyor or other convenient point for removal from the machine. As so delivered, the bags have had one end folded to form the bottom portion thereof, which folded portion is to be united to one wall by the coating thereof or at interposed line of adhesive.

The object of the present invention is to provide means for clamping and simultaneously heating such folded bottom portion to soften the coating and/or dry the same, and to dry the adhesive when employed, thereby assuring adherence of such folded portion. For this purpose, a series of clamping members 15 are provided, which may be carried by a pair of endless chains 16 and 17 passing over sprocket wheels 16^a and 17^a; power from a suitable source being applied to one of each pair of sprocket wheels to drive the same. The chains, preferably of the roller type, are arranged to ride on rails 18 and 19 suitably spaced and disposed in position so that registering pairs of the clamping members will effect the desired amount of pressure upon the folded bottom closures of the bags and, with the aid of the heat supplied, insure proper disposition of the paste or coating and effect the desired union of the folded portion forming such bottom.

The clamping members are positioned on the respective chains in spaced relation, and so related to the delivery tapes 10 that a bag bottom will be presented to each pair of clamping members just before they reach clamping position. After the bags have been gripped between a pair of the clamping members, they are carried the full length of the double chain run, which length is predetermined to secure the desired sealing ef-

fect. The sprocket wheels may be mounted on shafts 16^b and 17^b, journaled in a suitable frame 20 carried at the delivery end of the machine; such frame also supporting the rails 18 and 19 upon which the chains ride.

The clamping members, shown more clearly in Figs. 2 and 4, are composite structures and may comprise channel bars 21, connected at their ends to brackets 22 carried at desired intervals by the chains 16 and 17. In view of the fact that electrical heating means are employed, a fibre insulating block 23 is interposed between the brackets and the channel bars. The connections with the chains are detachable so that changes in spacing of said members may be effected, if and when desired. Centrally disposed upon the channel bars are removable ironing plates 24, of the required length, which are held in place by side clamps 25, secured to the channel bars by screws 26. The plates 24 which engage the folded bag bottoms are removable to permit insertion of longer or shorter plates, depending upon the width of the bags to be engaged thereby. The side edges of these ironing plates are beveled, and the side clamps 25 have a similarly shaped engaging part 25^a, as clearly shown in Fig. 4, to effect close contact of such plates with the channel bars 21.

The ironing plates 24 of the clamping members are to be heated so that, when clamping the folded bottoms of the bags, the coating may be softened, or the interposed adhesive may be dried and, for this purpose, each bar is provided with an electrical heating coil 30 disposed in the space between the side walls of the channel bars. These coils may be held in place by supports 31 which underlie the coils and are secured to the channel bars by screws 32.

The heating coils are in circuit with carbon brushes 33 carried at each end of each channel bar, and these brushes receive current from continuous contact plates 34, which may be of loop form, carried by insulating plates 35 mounted in the frame 20 between the chains 16 and 17. These contact plates are in circuit with a suitable source of current, connections therefor being shown at 36 in Fig. 4. The carbon brushes 33 may be mounted in metal tubes 37 supported in insulating sleeves 38, carried by brackets 39 depending from the ends of the channel members 21 to which they are held by screws 40. To insure the desired contact by the carbon brushes 33, springs 41 may be mounted between the same and screws 42 which secure the wires of the heating coils to the tubes 37.

The rails 19 over which the chains ride have beveled ends 19^a which guide the chains onto the same as they leave the sprocket wheels. To avoid sagging of the chains between the sprocket wheels when the complementary members are in clamping engagement with the folded ends of the bags, a supplemental rail 45 is preferably arranged between each pair of rails 19, and the lower runs of the upper chains ride on these supplemental rails 45. They may be carried by blocks 46, which may be secured to the inside of the walls of the frame 20 by means of screws 47. Fig. 6 shows the relation of one of the supplemental rails 45 with respect to the rails 19.

The delivery tapes 10 are spaced so as to engage the sides of the bags just beyond the ends of the ironing plates 24 carried by the channel bars 21. The tapes are adjustable so as to accommodate bags of various widths.

Various modifications may be made in the de-

tails of construction and arrangement forming the subject of this invention without departing therefrom, all of which is deemed to be within the scope of the appended claims.

5 I claim:

1. Means for effecting permanent engagement of the bottom turned or folded portions of paper bags, comprising cooperating clamping members between which said folded portions may be tightly held, continuous chain carriers for said clamping members whereby they may be brought into registering position to engage said folded bottom portions, and means for heating said cooperating clamping members as they are moved.

15 2. Means for effecting permanent engagement of the bottom turned or folded portions of paper bags, comprising cooperating tightly held members between which said folded portions may be clamped, continuous chain carriers for said tightly held members whereby they may be brought into registering position to engage said folded bottom portions, and electrical means for heating said cooperating tightly held members as they are moved.

25 3. Means for effecting permanent engagement of the bottom turned or folded portions of paper bags, comprising independent sets of cooperating clamping members between pairs of which said folded portions may be tightly held, independent chain carriers for said clamping members whereby they may be brought into registering position to engage said folded bottom portions, means for moving said chain carriers, and means for electrically heating each of said clamping members.

35 4. The combination, in a bag-making machine, of bag-delivering means, pairs of chains having runs arranged in superposed relation adjacent said bag-delivering means, independent clamping members carried by said chains in spaced relation and arranged to be brought into registering position to engage the bags at the folded bottom portions thereof, means for continuously moving said chains, means for heating said clamping members as they are moved by the chains, and means for continuously holding said clamping members in clamping position.

50 5. The combination in a bag-making machine of bag-delivering means, pairs of chains having runs arranged in superposed relation adjacent said bag-delivering means, rails engaged by said chains, independent clamping members carried by said chains in spaced relation and arranged to be brought into registering position to tightly engage the bags at the folded bottom portions thereof, means for continuously moving said chains, means for continuously holding said clamping members in clamping position, means for heating said clamping members as they are moved by the chains, and means for continuously holding said clamping members in clamping position.

65 6. The combination in a bag-making machine of bag-delivering means, pairs of chains having runs arranged in superposed relation adjacent said bag-delivering means, independent clamping members carried by said chains in spaced relation and arranged to be brought into registering position to tightly engage the bags at the folded bottom portions thereof, means for continuously holding said clamping members in gripping position, means for continuously moving said chains, and means for heating said clamping members.

70 7. The combination in a bag-making machine of means for delivering bags with folded ends,

pairs of chains having runs arranged in superposed relation adjacent said bag-delivering means, independent clamping members carried by said chains in spaced relation and arranged to be brought into registering position to tightly engage the bags at the folded bottom portions thereof, means for continuously holding said clamping members in gripping position, means for continuously moving said chains, and means for electrically heating said clamping members as they are moved by the chains.

8. The combination in a bag-making machine of means for delivering bags with folded ends, pairs of chains having runs arranged in superposed relation, independent clamping members carried by said chains in spaced relation and arranged to be brought into registering clamping position, detachable ironing plates carried by said clamping members between which the folded bottom portions of said bags are tightly gripped, means for continuously moving said chains, means for continuously holding said clamping members in gripping position, and means for heating said ironing plates.

9. The combination in a bag-making machine of means for delivering bags with folded ends, pairs of chains having runs arranged in superposed relation adjacent said bag-delivering means, independent members carried by said chains in spaced relation and arranged to be brought into registering clamping position, detachable ironing plates carried by said clamping members between which the folded bottom portions of said bags are gripped, means for continuously moving said chains, rails engaged by the chains to hold the clamping members in gripping position, and electrical means for heating said ironing plates as the clamping members are moved by the chains.

10. The combination in a bag-making machine of means for delivering bags with folded ends, pairs of chains having runs arranged in superposed relation adjacent said bag-delivering means, independent clamping members carried by said chains in spaced relation and arranged to be brought into registering position to tightly engage the bags at the folded bottom portions thereof, detachable ironing plates carried by said clamping members, means for continuously moving said chains, means for continuously holding said ironing plates in gripping position, electrical heating coils carried by the clamping members for heating said ironing plates, and brushes carried by said clamping members for delivering current to said electrical heating coils from contact plates in circuit with a source of electrical energy.

11. Means for effecting permanent engagement of the bottom turned or folded portions of paper bags, comprising cooperating ironing members between which said folded portions may be clamped, endless chain carriers for said ironing members, rails engaged by said chain carriers; certain of said rails being disposed for engagement by the lower runs of the upper chains and the upper runs of the lower chains, and a supplemental rail interposed between the said chain runs for preventing sagging of the lower runs of the upper chains.

12. Means for effecting permanent engagement of the bottom turned or folded portions of paper bags, comprising cooperating ironing members between which said folded portions may be clamped, endless chain carriers for said ironing members, rails engaged by said chain carriers; certain of said rails being disposed for engagement-

ment by the lower runs of the upper chains and the upper runs of the lower chains, a supplemental rail interposed between the said chain runs for preventing sagging of the lower runs of the upper chains, and means for supporting said supplemental rails independently of the other rails.

13. The combination, in a bag-making machine, of means for delivering bags with folded ends, continuously traveling clamping means comprising complementary cooperative clamping members for engaging the folded portions of said bags, means for bringing said clamping members into registering position, electrical heating coils carried by each of said clamping members, fixed contact plates in circuit with a source of electric current and said heating coils, and means for

continuously holding the clamping members in clamping position as they are moved.

14. The combination, in a bag-making machine, of means for delivering bags with folded ends, continuously traveling clamping means for engaging the folded portions of said bags, means for bringing said clamping members into registering position, electrical heating coils carried by said clamping members, fixed contact plates in circuit with a source of electrical current and said heating coils, brushes carried by said clamping members and having moving engagement with said contact plates, and means for continuously holding the clamping members in clamping position as they are moved.

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